

Exhibit "B"

Part 7 of 10

Table 5-31
Summary of Potential Cultural Resources Impacts at SBMR/WAAF

Impact Issues	Proposed Action	Reduced Land Acquisition	No Action
Impacts on historic buildings	⊙	⊙	○
Impacts on archaeological resources from range and facility construction	⊗	⊗	○
Impacts on archaeological resources from training activities	⊖	⊖	⊙
Impacts on archaeological sites from construction of fixed tactical internet	⊙	⊙	○
Impact on ATIs	⊗	⊗	○
Impacts on archaeological sites from road or trail construction	⊙	⊙	○
Impacts on archaeological sites from road use	○	○	N/A

In cases when there would be both beneficial and adverse impacts, both are shown on this table. Mitigation measures would only apply to adverse impacts.

LEGEND:

- | | | |
|--|-----|---------------------|
| ⊗ = Significant | + | = Beneficial impact |
| ⊖ = Significant but mitigable to less than significant | N/A | = Not applicable |
| ⊙ = Less than significant | | |
| ○ = No impact | | |

Less than significant impacts include the risk to undiscovered archaeological sites in areas of low potential for subsurface archaeological resources, the risk to sites from FTI construction, and the risk to historic architecture and landscapes from installation of cables and conduits. These impacts will be mitigated by complying with the Secretary of the Interior's Standards for Rehabilitation of Historic Buildings, as described in the PA in Appendix J.

Proposed Action (Preferred Alternative)

Significant Impacts

Impact 1: Impacts on archaeological resources from range and facility construction. Facility and range construction involves grubbing vegetation, grading site surfaces, excavating subsurface, and moving heavy construction equipment. All of these activities, particularly excavation, could result in direct damage to or destruction of archaeological resources.

SBMR contains numerous significant archaeological sites. USARHAW will conduct the mitigations described below in accordance with the PA, which will reduce the severity of these impacts but not to less than significant levels.

Regulatory and Administrative Mitigation 1. Before construction, the Army will complete the evaluation of any archaeological sites within areas subject to range and facility construction. Sites determined to be eligible for the NRHP will be flagged for avoidance. The projects will be designed to avoid all eligible and unevaluated archaeological sites, to the full extent practicable. GIS and GPS information will be given to project designers and range control to ensure that sites are considered in project design. If it is not possible to avoid archaeological sites, the Army will consult in accordance with the PA to determine the appropriate mitigation for the damage to the sites, such as data recovery or other mitigation measures. To address the accidental discovery of archaeological sites, human remains, or cultural items, the Army has developed an IDP as part of the PA.

Impact 2: Impacts on Areas of Traditional Importance. SRP (2003) conducted a TCP survey, as defined in Section 3.11.2, at SBMR, including the associated ranges. Archaeological surveys of construction areas and the range areas may not have identified TCPs or places of traditional importance to Native Hawaiians, even though some archaeological sites may constitute an ATI. Activities relating to the construction of the BAX, UACTF, and QTR1, and the use of QTR2, could result in destruction or damage, or restrict access to previously unknown properties of traditional importance to Native Hawaiians. Native Hawaiians consider range and training activities inappropriate and disrespectful uses of the land that disturb and change the character and feeling of spiritual places.

Acquisition of the SRAA and its subsequent use for military training could interfere with Native Hawaiian access to and use of sites on the parcel for traditional or religious purposes. Oral testimony indicates there are ATIs on the property, and some of these resources qualify as TCPs. Converting the area to military training purposes could result in limited Native Hawaiian access to some sites and might result in inadvertent physical damage or destruction of the sites. In order to protect such resources, a survey of the proposed construction and range areas for TCPs or ATIs has been conducted via pedestrian survey, archival research, oral interviews, and site visits with knowledgeable Native Hawaiians. USARHAW is taking a proactive role in trying to identify ATIs through its community outreach programs and activities, and plans to continue with these activities. Two FTI antenna support structures will be placed on Mount Ka'ala and one near Kolekole Pass. While the proposed FTI antenna support structures have been located to avoid archaeological resources, these areas have been identified as important elements of the cultural landscape of Wai'anae Uka. While the Kolekole antenna would be erected on top of an existing antenna support structure, the Mount Ka'ala sites would require new construction and may be considered to have an adverse visual effect.

Noise impacts described in Section 5.6 of this chapter would not have an impact on potential ATIs at Mount Ka'ala and Kolekole Pass because the noise contour maps show no noise impacts in these areas, and access would be limited to times when no ordnance would be firing.

Construction of the UACTF is identified for an area near Kolekole Pass, on or adjacent to the Elou Cliff Trail, a traditional trail identified as a potential ATI. Previous reconnaissance

surveys have failed to identify any remnants of the trail. The mitigation measures below will reduce the severity of the impact but not to less than significant levels.

Regulatory and Administrative Mitigation 2. Facility construction or training area uses will be designed to avoid identified traditional places and to limit visual impacts on TCPs by site location, design, and orientation, where feasible. If it is not possible to avoid identified TCPs or ATIs because of interference with the military mission or risk to public safety, the Army will consult with the SHPO and Native Hawaiians in accordance with the PA to identify impacts and to develop appropriate mitigation measures. Mitigation for impacts on the cultural landscape could include consulting with Native Hawaiians and having construction overseen by a cultural monitor.

The Army will continue to provide Native Hawaiians with access to traditional religious and cultural properties, in accordance with AIRFA and Executive Order 13007, on a case-by-case basis. This access program will be expanded to include new land acquisitions.

The Army previously identified Native Hawaiian burial sites in the SBCT ROI. The Army completed notification and consultation for these burial sites, in accordance with NAGPRA, and left these human remains in place. To address any impacts on any burial sites, or an inadvertent discovery of Native Hawaiian human remains or funerary objects, the Army will abide by all notification and consultation requirements outlined in Section 3 of NAGPRA.

Significant Impacts Mitigable to Less than Significant

Impact 3: Impacts on archaeological resources from training activities. Use of the BAX, the UACTF, and the new training areas in the SRAA could result in significant adverse impacts on archaeological resources.

Over 50 archaeological sites have been identified within the SRAA, the BAX contains over 30 sites, and the UACTF is known to be located in an area with possible cultural resources (Elou Cliff Trail). Potential impacts from the proposed training activities include damage to sites from subsurface excavations related to troop training (e.g., field fortifications, emplacement of obstacles), increased access by ground troops into the two ranges, off-road vehicular movement, possible damage from live fire. Maneuver training using tactical vehicles within the training areas would have a high potential to damage sites. The presence of large numbers of personnel could affect resources through vandalism or accidental damage.

Additionally, as discussed under geological resources, Strykers exert a greater amount of force on the ground than do vehicles previously used on training areas at SBMR. Off road mounted maneuvers with Strykers could result in greater direct impact on any remaining archaeological sites in all of the training areas, or in greater indirect impacts through contribution to erosion, as compared with No Action. At least 80 archaeological sites or distinct features have been identified in the West and South ranges (not including the SRAA); while these sites may have been affected by the existing uses of the training areas, use of the Strykers may cause more extensive damage. Implementation of the mitigation measures below would reduce significant impacts to less than significant levels.

Regulatory and Administrative Mitigation 3. The Army will evaluate archaeological sites within training areas related to SBCT. Sites determined to be eligible for the NRHP and sites pending evaluation will be identified and avoided through protective measures, to the full extent practicable. If avoidance of identified archaeological sites or newly discovered sites is not feasible, the Army will consult in accordance with the PA to determine the appropriate mitigation for the damage to the sites, such as data recovery. To address the accidental discovery of archaeological sites, human remains, or cultural items, the Army has developed an IDP as part of the PA. Less than Significant Impacts

Impacts on historic buildings. The construction of the Range Control Facility at SBMR would require demolishing buildings and constructing one large facility for range control activities on O'ahu. These buildings are not within the Schofield Barracks Historic District, but two of the buildings to be demolished (Buildings 2056 and 2276) are or will soon be 50 years of age and therefore may be eligible for the NRHP. In accordance with the PA, the buildings to be demolished will be evaluated for eligibility for the NRHP. If they are eligible, the Army would document the buildings in accordance with the standards of the Historic American Building Survey and the Historic American Engineering Record (HABS/HAER), in consultation with the SHPO, Historic Hawaii Foundation, and other interested parties.

Impacts on archaeological sites from construction of FTI. Most of these antenna sites would require new construction. The antenna support structures require a 15-foot (4.6-meter) by 20-foot (6.1-meter) concrete pad supporting an equipment support structure and shed. Construction of the pads, sheds, and support structures would require vegetation grubbing, site grading and leveling, some subsurface excavation, and the use of heavy construction equipment. These activities could damage or destroy previously undiscovered archaeological resources, as described above. The Army has conducted pedestrian surveys of the areas designated for construction. Archaeological sites identified through this survey and previously located sites within the project area will be flagged and avoided. If any archaeological resources were discovered during construction, all activity in the area of the site will stop, and the Army will comply with the provisions of the IDP contained in the PA.

Impacts from road or trail construction. Construction of Helemanō Trail involves purchasing approximately 17 acres (6.9 hectares) of land in a perpetual easement and constructing a 15-foot-wide (4.6-meter-wide) road with 3-foot-wide (0.91-meter-wide) shoulders on both sides. Wherever possible, the road would follow existing dirt and paved roads or pass through areas that have been previously disturbed by pineapple cultivation. The potential impact of this transformation project on cultural resources is relatively low, because the road would largely cross areas that have been under intensive commercial agriculture. The survey did not reveal the presence of archaeological sites within the easement. Accidental discoveries of archaeological materials during construction would be mitigated by compliance with the IDP contained in the PA.

No Impacts

The upgrade of the airfield at WAAF for C-130 aircraft operations is adjacent to the WAAF National Historic Landmark District. The project is located on the south side of the main runway, and it does not appear that construction of the apron improvements would

adversely affect the integrity of the landmark. Although there are World War II bomb craters within the Proposed Action's ROI, any proposed construction would avoid these resources.

Use of Helemanō Trail is unlikely to result in any impacts because the area is low in archaeological potential, and there are no sites reported.

Reduced Land Acquisition Alternative

Reduced land acquisition would produce the same impacts at SBMR as the Proposed Action, except the reduced amount of land acquired for training range uses would result in fewer impacts on undiscovered archaeological resources in the SRAA at SBMR and could slightly reduce interference with Native Hawaiian access and use. Construction of QTR2 at PTA rather than SBMR would involve a minor overall reduction of impacts on archaeological resources at SBMR.

No Action Alternative

Less than Significant Impacts

Impacts on archaeological resources from training activities. Under No Action, impacts on cultural resources would continue at current levels; these impacts include ongoing impacts on archaeological resources on range and training areas. Such impacts could be caused by training activities such as ground troop activities, off-road vehicle movement, and subsurface excavations, as well as impacts from live fire exercises. Units involved in excavation activities are frequently accompanied by archaeologists to redirect digging away from archaeological sites or monitor digging for cultural resources. Archaeological resources on the ranges are monitored following exercises to document adverse effects on the sites. Based on this monitoring, archaeological staff at USARHAW have concluded that ongoing current training does not result in significant impacts on cultural resources on the training areas.

Under No Action, current force training would continue and USARHAW will continue efforts to inventory eligible historic properties in compliance with Section 110 of the NHPA, and current force-related project planning would comply with Section 106 and its implementing regulations. Construction of new current force facilities would be managed in compliance with installation cultural resources management policies and Section 106 of the NHPA, as well as NAGPRA and ARPA. Impacts on cultural resources would be mitigated in compliance with these regulatory requirements.

Known Prehistoric and Historic Resources**Kahuku Training Area**

Table 7-23 provides an overview of prehistoric and historic resources identified with the ROI and their NRHP status if known. One hundred archaeological sites have been identified at KTA, including prehistoric, historic, and military era sites. These include a heiau listed on the NRHP and a hearth, dwelling, and agricultural sites. Historic sites include a house, irrigation features, and bunkers. The 'Ōpana Mobile Radar Station is a National Historic Landmark listed in the NRHP. Only the heiau and the radar station have been evaluated for eligibility. Table 7-24 lists currently identified archaeological sites at KTA.

Table 7-23
Summary of Known Cultural Resources at KTA

	Total Archaeological Sites	Sites Listed, Eligible for Listing, or Needing DE	Area Surveyed for Archaeological Sites	Cold War Era Buildings	Buildings Listed, Eligible for Listing, or Needing DE
KTA	100	36 (34 DE)	33%	22	22
Drum Road	23	23	27 miles ¹ (43.5 kilometers)	0	0

Sources: IARII 2003; Pacific Legacy 2002; GANDA 2003c; SCS 2003.

¹Fifteen meters on each side of 27 miles (43.5 kilometers) of road

DE – Determination of Eligibility.

Cold War-era buildings or structures at KTA are listed in Table 7-25. These sites are composed of the former Nike missile security facility and launch sites. The missile site at KTA was one of four Nike missile sites in Hawai'i and was active from January 1961 to March 1970. The buildings and structures are intact and are generally unaltered. The launcher area, administration area, and the control area all retain not only the original structures, but also many of the site features, such as security fencing, sidewalks, exterior stairs with metal railings, streets and curbing, flagpoles, bicycle wash/storage area, and electrical and plumbing equipment. The setting appears to be unaltered, other than the change in landscaping due to the abandonment of the site. Preserving this site was a stipulation of the Section 106 consultation on the demolition of the Nike site at DMR.

The Nike site is significant as an intact example of a Cold War Nike missile site and reflects an important development in the history of American civil air defense and as part of the Hawai'i Nike missile program. The site is eligible for the National Register under criterion A, having been associated with events that have made a significant contribution to the broad patterns of our history, and under criterion C, as it is a relatively unaltered and intact example of Nike missile site construction (IARII 2002a).

Table 7-24
Archaeological Sites at KTA

Site Number	Site Type	Site Description
50-80-02-0259	Spring	Waikane Stone
50-80-02-0260	Heiau	Pu'uala Heiau (4,930 terrace facing)
50-80-02-0599	Bunkers	Three bunkers at Punamanō Communication Station
50-80-02-1043	Complex	Kawela agricultural terraces
50-80-02-2357	Wall	Plantation era stone wall remnant
50-80-02-2358	Single feature	House site 13m x 10m
50-80-02-2359	Two adjacent terraces	Terraces 22.5m x 6m
50-80-02-2360	Single feature	Terrace 20m x 10m
50-80-02-2501	Heiau	Hanakaoc platform 4m x 7m
50-80-02-4882	Bunker	Military bunker 8.7m x 4.5m
50-80-02-4883	Historic house site	Plantation era house site
50-80-02-4884	Imu	Imu site 3m
50-80-02-4885	Heiau	Pahipahi'āluaHeiau 17m x 12m
50-80-02-4886	Bunker	Pentagonal military bunker 3.5m x 3m
50-80-02-4887	Terrace complex	Habitation complex with related agricultural features 24m x 14m
50-80-02-4888	Wall/depressions	Agricultural earthen depressions/rock alignment 20m?
50-80-02-4930	Linear mound	Linear rock mound (remnants Site 260?) 7m x 2m
50-80-02-5534	Rock shelter	Temporary shelter 5m x 2.5m
50-80-02-5536	Rock shelter	Temporary shelter? 15m x 3m
50-80-02-5537	Enclosure	Enclosure (pre-Contact) 62m x 40m
50-80-02-5538	Wall	Wall (pre-Contact) 15m x 1m

Table 7-24
Archaeological Sites at KTA (continued)

Site Number	Site Type	Site Description
50-80-02-5539	Terraces	Retaining wall and stone concentration 40m x 20m
50-80-02-5540	Terraces	Terraces 15m x 15m
50-80-02-5684	Enclosure	Enclosure 50m x 25m
50-80-02-5685	Rock shelter	Temporary shelter 9m x 5m
50-80-02-5686	Ahupua'a boundary	Wall 4m x 1m
50-80-02-5688	Roadway	Historic roadway 30m x 6m
50-80-02-5689	Bunker	Underground bunker 3m x 2m
50-80-02-5690	Enclosure	Bunker 4m x 3m
50-80-02-9506	Historic irrigation	Kea'aulu Ditch (hist. stone faced irr. ditch)
50-80-02-9507	Historic (?) terrace	'O'io Stream terrace (ag. terrace)
50-80-02-9508	Platform	East 'O'io Gulch platform (stepped stone platform)
50-80-02-9509	Complex	'O'io Gulch complex (agricultural terraces)
50-80-02-9517	Terraces	Kāneali'i agricultural terraces (possible remnants)
50-80-02-9745	Landmark	'Opana Mobile Radar Site
<u>SCS Temp# 1</u>	<u>Military</u>	<u>Fox holes</u>
<u>SCS Temp# 2</u>	<u>Military</u>	<u>Fox holes with rock wall</u>
<u>SCS Temp# 3</u>	<u>Military</u>	<u>Leveled area behind outcrop</u>
<u>SCS Temp# 16</u>	<u>Military</u>	<u>Rock terrace</u>
<u>SCS Temp# 19</u>	<u>Military</u>	<u>Concrete structure</u>
<u>SCS Temp# 30</u>	<u>Military</u>	<u>Bunker</u>
<u>SCS Temp# 36</u>	<u>Military</u>	<u>Concrete slab</u>
<u>SCS Temp# 38</u>	<u>Military</u>	<u>Concrete slab</u>
<u>SCS Temp# 39</u>	<u>Military</u>	<u>Concrete blocks</u>
<u>SCS Temp# 40</u>	<u>Military</u>	<u>Concrete slabs</u>
<u>SCS Temp# 41</u>	<u>Military</u>	<u>Concrete slab</u>
<u>SCS Temp# 42</u>	<u>Military training</u>	<u>Fire pit with trash</u>
<u>SCS Temp# 43</u>	<u>Military</u>	<u>Concrete slabs</u>
<u>SCS Temp# 44</u>	<u>Military</u>	<u>Concrete Slab with metal tank</u>
<u>SCS Temp# 45</u>	<u>Military</u>	<u>Concrete slab</u>
<u>SCS Temp# 47</u>	<u>Military</u>	<u>Concrete slabs</u>
<u>SCS Temp# 48</u>	<u>Military</u>	<u>Foundations with bottle glass</u>
<u>SCS Temp# 49</u>	<u>Military</u>	<u>Concrete drainage</u>
<u>SCS Temp# 53</u>	<u>Military training</u>	<u>Collapsed concrete box</u>
<u>SCS Temp# 54</u>	<u>Military training</u>	<u>Intact concrete box</u>
<u>SCS Temp# 56</u>	<u>Military training</u>	<u>Fire pit with metal fragments and other trash</u>
<u>SCS Temp# 60</u>	<u>Military</u>	<u>Two fire pits with trash</u>

Table 7-24
Archaeological Sites at KTA *(continued)*

<u>Site Number</u>	<u>Site Type</u>	<u>Site Description</u>
<u>SCS Temp# 4</u>	<u>Plantation/Agriculture possible</u>	<u>Boulder concentration</u>
<u>SCS Temp# 10</u>	<u>Unknown</u>	<u>Rectangular boulder platform</u>
<u>SCS Temp# 11</u>	<u>Unknown/stabilization</u>	<u>Terrace down slope of a level area</u>
<u>SCS Temp# 12</u>	<u>Pre-military</u>	<u>Multiple features, including mounds and fox holes</u>
<u>SCS Temp# 13</u>	<u>Historic</u>	<u>Linear terrace</u>
<u>SCS Temp# 20</u>	<u>Historic</u>	<u>Terrace and a road</u>
<u>SCS Temp# 21</u>	<u>Historic</u>	<u>Rock mound</u>
<u>SCS Temp# 22</u>	<u>Historic</u>	<u>Rock mound</u>
<u>SCS Temp# 24</u>	<u>Historic</u>	<u>Boulder concentration</u>
<u>SCS Temp# 25</u>	<u>Historic</u>	<u>Tow linear boulder concentrations</u>
<u>SCS Temp# 26</u>	<u>Historic</u>	<u>Rock mound</u>
<u>SCS Temp# 32</u>	<u>Historic</u>	<u>Cobble and boulder terrace</u>
<u>SCS Temp# 33</u>	<u>Historic</u>	<u>Rock mound</u>
<u>SCS Temp# 50</u>	<u>Historic</u>	<u>Linear boulder concentration</u>
<u>SCS Temp# 52</u>	<u>Historic</u>	<u>Boulder and cobble piles</u>
<u>SCS Temp# 55</u>	<u>Historic</u>	<u>Linear boulder concentration</u>
<u>SCS Temp# 57</u>	<u>Historic</u>	<u>Boulder mound and terrace</u>
<u>SCS Temp# 61</u>	<u>Historic</u>	<u>Rock mound and depression</u>
<u>SCS Temp# 63</u>	<u>Historic</u>	<u>Rock mound</u>
<u>SCS Temp# 64</u>	<u>Historic</u>	<u>Multiple rock mounds</u>
<u>SCS Temp# 5</u>	<u>Undetermined</u>	<u>Paved terrace and rock mounds</u>
<u>SCS Temp# 6</u>	<u>Undetermined</u>	<u>Terrace</u>
<u>SCS Temp# 7</u>	<u>Prehistoric</u>	<u>Enclosure and mounds</u>
<u>SCS Temp# 8</u>	<u>Undetermined</u>	<u>Mounds with glass bottles</u>
<u>SCS Temp# 9</u>	<u>Undetermined</u>	<u>Enclosure with entryway</u>
<u>SCS Temp# 14</u>	<u>Prehistoric</u>	<u>Rock mound</u>
<u>SCS Temp# 15</u>	<u>Prehistoric/Historic</u>	<u>Rock concentration</u>
<u>SCS Temp# 17</u>	<u>Undetermined</u>	<u>Modified outcrop, rock mounds</u>
<u>SCS Temp# 18</u>	<u>Agriculture/undetermined</u>	<u>Linear rock mound</u>
<u>SCS Temp# 29</u>	<u>Traditional</u>	<u>Tow fire pits</u>
<u>SCS Temp# 34</u>	<u>Undetermined</u>	<u>Wall with sub-features</u>
<u>SCS Temp# 46</u>	<u>Undetermined</u>	<u>Large retaining terrace</u>
<u>SCS Temp# 51</u>	<u>Undetermined</u>	<u>Terraces and rock mounds</u>
<u>SCS Temp# 58</u>	<u>Prehistoric</u>	<u>Lithic scatter</u>
<u>SCS Temp# 59</u>	<u>Prehistoric</u>	<u>Rock mound, possible trail marker</u>
<u>SCS Temp# 65</u>	<u>Traditional</u>	<u>Fire pit</u>

Source: IARII 2003; GANDA 2003c; SCS 2003.

Table 7-25
Historic Military Buildings at KTA

Facility No.	Description (original use)	Year Built	Historical Period
0001	Administrative building	1961	Cold War
0003	Flagpole (gone)	1961	Cold War
0004	Pump house (water supply/treatment building)	1961	Cold War
0005	Barracks and mess hall	1961	Cold War
0008	Water storage tank	1961	Cold War
0009	Water supply/treatment building; pump house	1961	Cold War
0013	Control station; air/fallout shelter	1961	Cold War
0014	Control station; air/fallout shelter	1961	Cold War
0018	Control station; air/fallout shelter	1961	Cold War
00020	Sentry box	1961	Cold War
0022	Protective barrier	1961	Cold War
0023	Protective barrier	1961	Cold War
0026	Protective barrier	1961	Cold War
0027	Protective barrier	1961	Cold War
0028	Sentry control station	1961	Cold War
0030	Protective barrier	1961	Cold War
0036	Protective barrier	1961	Cold War
0037	Warhead building	1961	Cold War
0045	Missile assembly and test building	1961	Cold War
0047	Generator building	1961	Cold War
0048	Transformer building	1955	Cold War
0060	Sentry box	1961	Cold War
0061	ACQ tower (gone)		Cold War
0063	Administration building	1961	Cold War
0064	Flagpole	1961	Cold War
0067	Barracks and mess hall	1961	Cold War
0070	Generator building	1961, 1963	Cold War
0071	Transformer pad	1963	Cold War
0075	MTR & TTR pad	1963	Cold War
0078	<u>MTR & TTR pad</u>	<u>1963</u>	<u>Cold War</u>
0079	<u>MTR & TTR pad</u>	<u>1963</u>	<u>Cold War</u>
0080	<u>Interconnecting corridor</u>	<u>1961</u>	<u>Cold War</u>
0081	<u>Pad for control vans</u>	<u>1961</u>	<u>Cold War</u>
0082	<u>Pad for control vans</u>	<u>1961</u>	<u>Cold War</u>
0083	<u>Pad for control vans</u>	<u>1961</u>	<u>Cold War</u>
0087	<u>HIPAR tower (gone)</u>	<u>1961</u>	<u>Cold War</u>
0089	<u>Water tank</u>	<u>1961</u>	<u>Cold War</u>
0090	<u>Bore site mast (gone)</u>	<u>1961</u>	<u>Cold War</u>
T-150	Guard tower	c. 1961	Cold War
T-151	Guard tower	c. 1961	Cold War

Source: IARII 2003

Kawailoa Training Area

Archaeological surveys have been conducted of selected areas within KLOA, primarily in the gulches in the west portion of the project area, and 55 archaeological sites have been identified. All sites have been recommended as eligible for listing on the NRHP, and several also might be considered ATIs. Table 7-26 lists the currently identified sites within KLOA that are recommended as eligible for the NRHP.

Drum Road

Pacific Legacy has surveyed the proposed alignment for the construction and upgrade of Drum Road and found 23 archaeological sites within or near the area of impact of the Drum Road upgrade in KTA (Pacific Legacy 2002).

Drum Road starts from the northwest area of HMR. Fankhauser recorded three historic sites in Helemanō Gulch just north of HMR (Fankhauser 1987).

Potential for Unknown Resources

Kahuku Training Area

The site probability model presented by Williams and Patolo (1998, 77-81; see also Williams and Patolo 1998, 79, Figure 23) offers a low probability for archaeological sites in low elevation areas because they have been subjected to extensive land-altering disturbances from sugarcane and pineapple farming and military use. Areas in the rugged interior of KTA, above the 800-foot (244-meter) elevation, which have seen no modern land use alterations and which Native Hawaiians could have used for resource exploitation (e.g., farming), have no surface visibility. Areas of medium site location probability include narrow gulches and the lower elevations between 600 and 800 feet (183 and 244 meters). These areas have had less modern land use alterations and are closer to the populated coastal flatland bordering KTA. Areas of high site location probability include bluff slopes and edges and the mouths of narrow gullies because these areas have suffered less modern land disturbances and they border the coastal flatlands. Through archival research, Williams and Patolo (1998, 81) discovered that bordering coastal flatlands were the primary settlement areas in the past.

The proposed sites for constructing the CACTF at KTA lie in areas designated as sensitive for archaeological resources (IARII 2003; Davis 1981). Figures 7-27 and 7-28 show areas of archaeological sensitivity at KTA and KLOA.

Kawailoa Training Area

Some of KLOA has not been surveyed for cultural resources due to the difficulty of access. The very rugged steeply sloped terrain has a low site location probability. Unsurveyed areas with similar topography as those areas known to contain archaeological sites, however, have a high probability of unrecorded sites. Because the type of use or use areas are not going to change, there is a low probability for unrecorded cultural resources to be disturbed.

Table 7-26
Archaeological Sites at KLOA

State Site No.	Site Type	Description
50-80-04-5634	Wall complex	Three retaining walls/ one align
50-80-04-5635	Single lava tube	Lava tube
50-80-04-5637	Single trail	Kawailoa Trail
50-80-04-5638	Single trail	Ko'olau Summit Trail
50-80-05-5605	Path, terraces	Historic path, dryland agriculture
50-80-05-5606	Multiuse complex	Agriculture/habitation/ceremonial complex
50-80-05-5607	Terrace complex	Four alignments/auwai
50-80-05-5608	Two align	alignments
50-80-05-5609	Terrace/lo'i fields	Alignments/earth berms/lo'i fields
50-80-05-5610	Terrace/lo'i fields	Three alignments/lo'i fields
50-80-05-5611	Terrace complex	"Island" ag site in Kawainui Stream
50-80-05-5612	Terrace complex	
50-80-05-5613	Terrace/platform complex	Two temporary habitations, platforms/align/planting areas
50-80-05-5614	Terrace complex	Align/platform
50-80-05-5615	Terrace complex	
50-80-05-5616	Terrace complex	
50-80-05-5617	Terrace system	Good species indicators
50-80-05-5618	Wall	15m wall
50-80-05-5619	Terrace system	Wall and three terraces
50-80-05-5620	Terrace complex	four terraces/planting areas
50-80-05-5621	Terrace complex	Three terraces/one long mound
50-80-05-5622	Terrace complex	Large lo'i system
50-80-05-5623	Terrace complex	Large lo'i system
50-80-05-5624	Single imu	Imu
50-80-05-5625	Terrace complex	Terrace walls/mounds/'auwai
50-80-05-5626	Terrace complex	
50-80-05-5627	Terrace complex	
50-80-05-5628	Terrace complex	
50-80-05-5629	single platform	Possible burial
50-80-05-5630	Terrace complex	Nine+ walls/two enclosures/several clearing mounds
50-80-05-5631	Single rock shelter	Rock shelter: possible burial
50-80-05-5632	Terrace complex	Small alignments
50-80-05-5633	Terrace complex	Small terrace walls
50-80-05-9510	Platform	Kawainui Platform
50-80-05-9511	Terraces	Kawaiiki Agricultural Complex
50-80-05-9512	Complex	Kawailoa Complex
50-80-05-9513	Enclosure	Kawainui Enclosure
50-80-05-9514	Platforms	Kawaiiki Platform
50-80-04-5717	Alignment, planting areas	Dryland agriculture
50-80-04-5718	Terrace remnant	Irrigated agriculture
50-80-04-5719	Pumping station	Sugarcane industry

Table 7-26
Archaeological Sites at KLOA *(continued)*

State Site No.	Site Type	Description
50-80-04-5720	Terrace remnants, ahu	Dryland agriculture, marker
50-80-04-5721	Walls, trail	Dryland agriculture, animal pen, transportation
50-80-04-5722	Concrete slab, terrace	Gauging station
50-80-04-5723	Road facing, road	Transportation
50-80-04-5724	Alignment	Dryland agriculture
50-80-04-5725	Stacked wall, modified slope	Pool; unknown
50-80-04-5730	Alignment	Retaining wall
D6-32	Terraces	
D6-33	Terrace	
D6-34	Complex	Kainiki's house (LCA)
D6-40	House site	Mailou's house (LCA)
D6-41	Irrigation complex	pondfield system
D6-42	Small pondfield system	'Ili Koilau System
D6-43	Irrigation pondfield system	'Ili Pulepule System

Source: IARII 2003

Drum Road

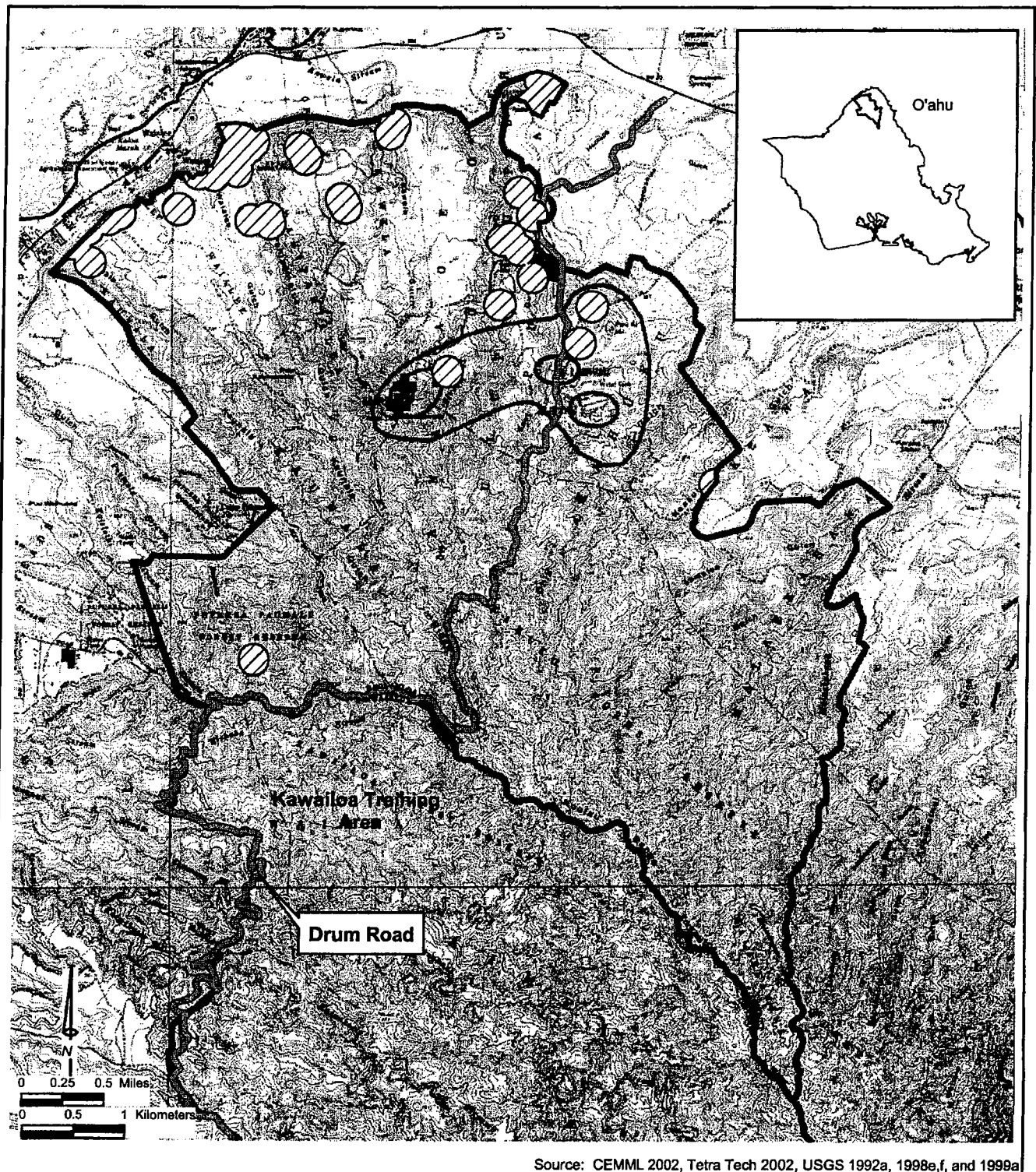
There is a high probability that archaeological sites will be discovered during road construction of the segment traversing KLOA.

7.11.2 Environmental Consequences

Summary of Impacts

Cultural resources impacts related to the Proposed Action at KTA vary, depending on the location and the nature of the project. Significant impacts are likely for historic buildings from construction and demolition. Significant impacts mitigable to less than significant involve impacts on archaeological resources from range and facility construction (Table 7-27). As explained in the mitigation sections below, these impacts could be mitigated by compliance with the PA the Army has developed in consultation with the Hawai'i SHPO, the ACHP, Native Hawaiians, and other parties. The PA is provided in Appendix J. The three less than significant impacts identified are the risk to archaeological resources from training activities, the risk to unidentified ATIs, and impacts on archaeological resources from road use. These impacts will be mitigated by compliance with the PA and the IDP and monitoring by installation personnel.








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Source: CEMML 2002, Tetra Tech 2002, USGS 1992a, 1998e,f, and 1999a

Archaeological Sensitivity Areas have been compiled from many sources for Kahuku Training Area.

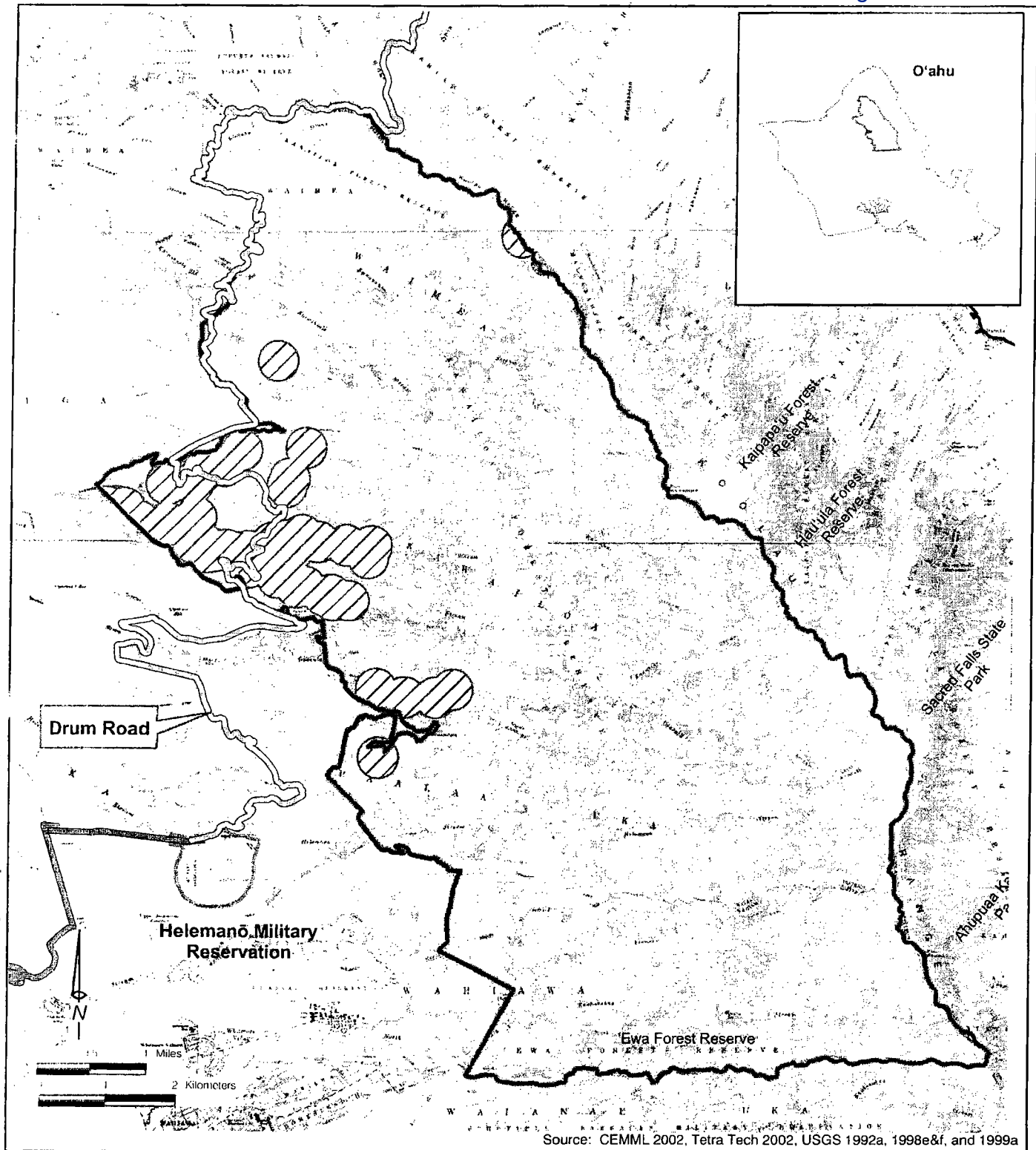
Legend

-  Archaeological Sensitivity Zones
-  Drum Road
-  Kahuku Training Area Boundary
-  S7 Fixed Tactical Internet
-  K1 Tactical Vehicle Wash
-  K2 Combined Arms Collective Training Facility
-  Roads

Archaeological Sensitivity Areas at Kahuku Training Area

O'ahu, Hawai'i

Figure 7-27



However a stepped stone platform (site 50-80-02-9508) is in the gulch immediately northeast of the project area, and a heiau (site 50-80-02-2501) is only a short distance to the northwest.

Facility construction involves grubbing vegetation, grading site surfaces, excavating the subsurface, and moving heavy construction equipment. All of these activities could result in direct destruction of or damage to archaeological resources or indirect damage by contributing to soil erosion. Sites 9508 and 2501 could be indirectly affected by runoff and erosion during construction of the tactical vehicle wash. USARHAW will conduct the mitigations described below, which will reduce impacts to less than significant.

Regulatory and Administrative Mitigation 2. Before construction, the Army will complete evaluating any archaeological sites within areas subject to range and facility construction. Sites determined to be eligible for the NRHP will be flagged for avoidance. The projects will be designed to avoid all eligible and unevaluated archaeological sites, to the full extent practicable. GIS and GPS information will be given to project designers and range control to ensure that sites are considered in project design. If it is not possible to avoid archaeological sites, the Army will consult in accordance with the PA to determine the appropriate mitigation for the damage to the sites, such as data recovery or other mitigation measures. To address the accidental discovery of archaeological sites, human remains, or cultural items, the Army has developed an inadvertent discovery plan as part of the PA.

Less than Significant Impacts

Impacts on archaeological resources from training activities. There are not likely to be significant increased impacts on archaeological resources on the KTA training areas from off-road tactical vehicle maneuvers and other military training activities. Known archaeological sites have a buffer area delineated as a no use area. Possible impacts would include accidental discoveries of unknown archaeological resources and damage to them as a result of training activities on the range. Additionally, as discussed under geological resources, Strykers exert a greater amount of force on the ground than do vehicles previously used on training areas. Off road mounted maneuvers with Strykers could result in greater indirect impacts through contribution to erosion.

These impacts will be mitigated by regular monitoring by cultural resources personnel, and compliance with the IDP developed as part of the PA, as described above. If sites were discovered as a result of erosion or training exercises, the PA provides for compliance with the provisions of NAGPRA and ARPA in case of accidental discovery of human remains, cultural items, or archaeological materials. All known sites will be evaluated for eligibility to the NRHP and flagged for avoidance.

Impacts on Areas of Traditional Importance. The ATIs that have been identified at KTA are outside the boundaries of the project areas for the construction and use of the CACTF and tactical vehicle wash. However, further oral historical and archival research might result in the identification of ATIs that could be affected by these projects. Any identified ATIs will be avoided where feasible. Construction or training area uses will be designed to avoid identified traditional places and to minimize visual impacts on traditional cultural landscapes by site location, design, and orientation, where feasible.

8.10 BIOLOGICAL RESOURCES

8.10.1 Affected Environment

Introduction/Region of Influence

Biological resources include plant and animal species and the habitats or communities in which they occur. This section is divided into discussions of general wildlife, vegetation, and habitat types common to PTA, including sensitive species and habitats known to occur or with the potential to occur in this area. Federal, state and locally regulated species are included in this report, along with rare species, identified by rapid population decline or whose habitat has markedly decreased in recent years.

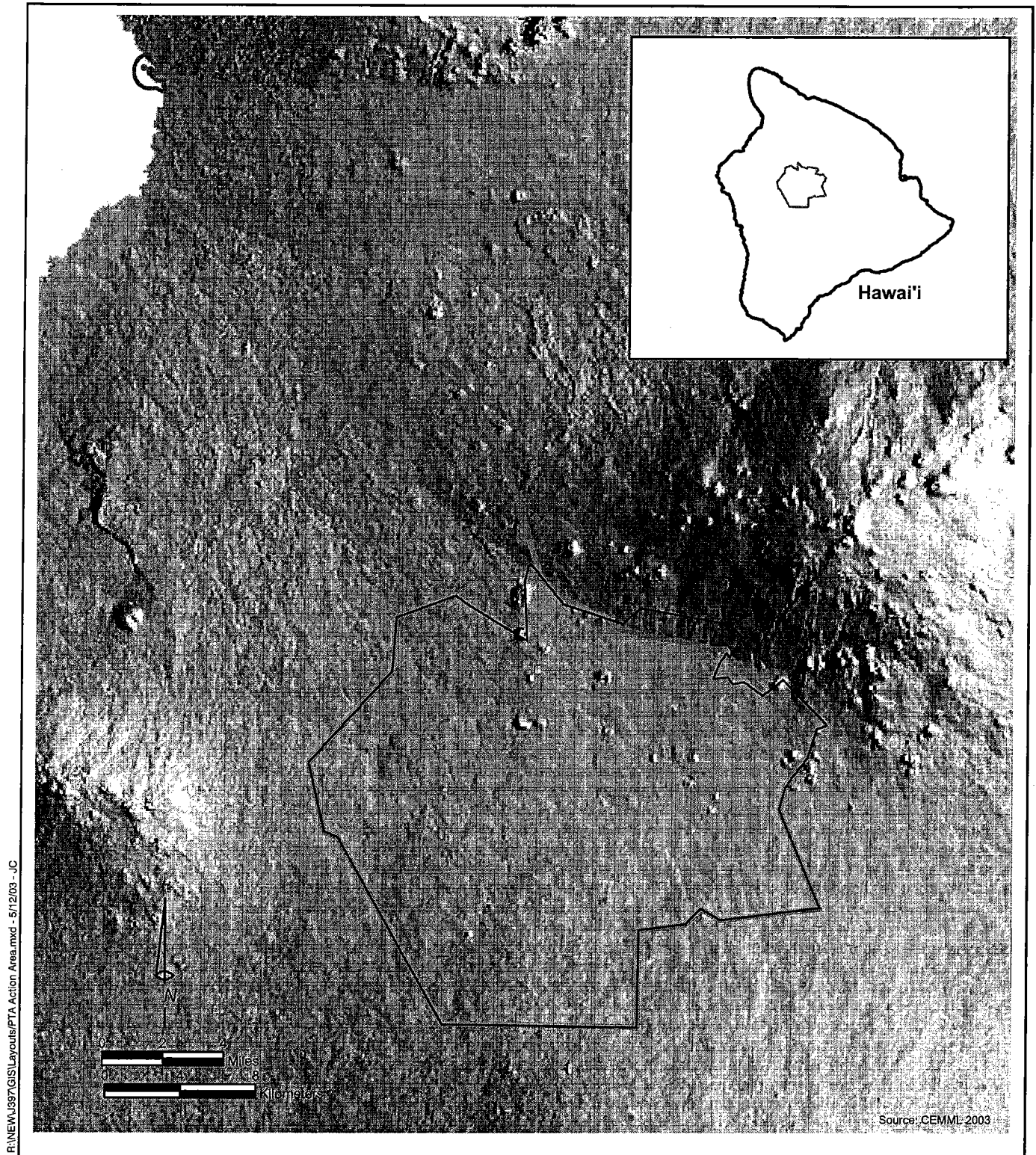
The terrestrial portion of the PTA ROI (Figure 8-32) was based largely on the potential for damage from fires during training and, in the case of the military vehicle trail, damage due to the expansion of and increased activity on the trail. Fire has been evaluated to be the most far-reaching impact on PTA, with the exception of PTA Trail, because of its ability to affect a large area. Degradation of habitat due to physical activities around PTA Trail would have the greatest potential impact on the area due to the nature of activities proposed and allowed in their vicinity. The terrestrial portion of the PTA ROI also includes a 164-foot (50-meter) buffer on either side of the proposed trail, as well as a portion of the coast over which aircraft maneuvers may occur.

The marine portion of the PTA ROI (Figure 8-32 and Figure 3-13) involves the nearshore and offshore Pacific waters between O'ahu and the island of Hawai'i, the Pearl Harbor area of O'ahu, the Kawaihae Harbor area of the island of Hawai'i, and adjacent coastlines to the harbors. Marine habitat was considered because there will be continuing and slightly increased vessel transport of troops back and forth from O'ahu and the island of Hawai'i. Portions of this area are within the Hawaiian Islands Humpback Whale National Marine Sanctuary waters. Also, the construction of a fixed tactical tower at the Kawaihae Harbor area could potentially impact marine habitat. No harbor construction work is considered as part of this project action as impact analyses of that action would occur under separate NEPA documentation. The location and sensitivity of these marine ecosystems were taken into account when determining the marine portion of the PTA ROI for the Proposed Action.

Biological data were collected from numerous sources, including the USFWS, NMFS, HDLNR, HBS, HINHP, US Army PTA, and various biological surveys and environmental documents that are cited throughout this document. For details on pertinent regulations see Appendix N.

Recovery Plans

Thirteen plant and six animal species with recovery plans are known to or have the potential to occur within the PTA ROI. These species are listed in Appendix I-1a.



The Pōhakuloa Training Area Region of Influence is based on the potential impact of fire and trampling, and includes coastal areas in the proximity of project activity.

- Legend**
- Pōhakuloa Training Area
 - Region of Influence
 - Aquatic Region of Influence

Terrestrial and Aquatic Biological Region of Influence at the Pōhakuloa Training Area

Island of Hawai'i, Hawai'i

Figure 8-32

8-134

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Vegetation

PTA is on the island of Hawai'i, on the west side of Humu'ula Saddle, a plateau formed by Mauna Kea and Mauna Loa. The surrounding lands are mostly designated as conservation district and are managed or leased by a variety of private landowners and the State of Hawai'i. Studies of the vegetation communities in the saddle region of Hawai'i date from 1861. The next study was in 1888, and these continued through the 1930s. A 1977 EIS by Environmental Impact Survey, Inc., provided a baseline vegetation listing, and the floristic inventory of PTA by CEMML began in 1988 and continues today. Approximately 38 percent of the plants found on PTA are indigenous or endemic and thousands of hours have been spent collecting information on their location and distribution. Endangered and threatened species and species of concern (all defined according to federal guidelines) are found on PTA. Vegetation communities occurring in the PTA ROI are identified in Figure 8-33 and described below.

Though PTA is the largest military training area outside of the continental US, almost one-third of the land has been deemed unsuitable for training. The impact area accounts for almost 50 percent of PTA, and no troop movement is permitted in this area. Additionally some of the terrain is inhospitable and unusable for training. Twenty-three separate training areas at PTA support a variety of military exercises. Outside of the PTA boundaries are grassy rangelands and pastures dominated by introduced vegetation (Figure 8-33). Mature native plants are rarely found in these communities disturbed by cattle though they can be found in rocky areas where cattle movement is unlikely. There is a unique vegetation community in the lower south end of the parcel, specifically *Leptecophylla-Ostomeles-Dubautia* shrubland, a lowland mesic shrubland community.

The Army uses the Kawaihae Military Reservation as its port facility for shipping equipment and ammunition from O'ahu. A trail stretches from the Kawaihae Harbor to the installation, but it is seldom used. This trail is heavily weeded and described as extremely stony with a very fine sandy loam that is prone to erosion if not vegetated.

There are 24 vegetation communities on PTA (Shaw and Castillo 1997). It is important to note that numerous introduced plant species make up a significant portion of many of these habitats, and, additionally, introduced plants are components in all habitats on PTA. About 62 percent of the plants found at PTA are introduced species. Barren lava covers 25 percent of the installation. Lichens, such as *Stereocaulon vulcani*, and ferns, such as *Pellaea ternstroemia*, are the first colonizers of these flows, though fountain grass (*Pennisetum setaceum*) is invading barren areas.

There are four types of *Metrosideros* treeland, ranging from sparse to mixed intermediate. The dominant canopy vegetation in these areas is generally 'ohi'a. The mixed intermediate treeland has a second canopy layer made up of primarily *Myrsine lanaiensis* and naio (*Myoporum sandwicense*). Understory species include different densities of 'a'ali'i, *Leptecophylla tameiameia*, and, in some instances, *Osteomeles anthyllifolia*. Fountain grass is invading all of these communities.